

# STIC Search Report

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STIC Database Tracking Number: 197679

TO: Ben Sackey  
Location: 5c31 / 5c18  
Art Unit: 1626  
Wednesday, August 09, 2006

Case Serial Number: 10/751388

From: Noble Jarrell  
Location: Biotech-Chem Library  
Rem 1B71  
Phone: 272-2556

Noble.jarrell@uspto.gov

### Search Notes

8-208

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## SEARCH REQUEST FORM

Requester's Full Name: Ben Sackey Examiner #: 73489 Date: 8/10/06Art Unit: 1176 Phone Number: 2-0704 Serial Number: 161751, 388Location (Bldg/Room#): Room 5B31 (Mailbox #): \_\_\_\_\_ Results Format Preferred (circle): PAPER DISK

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To ensure an efficient and quality search, please attach a copy of the cover sheet, claims, and abstract or fill out the following:

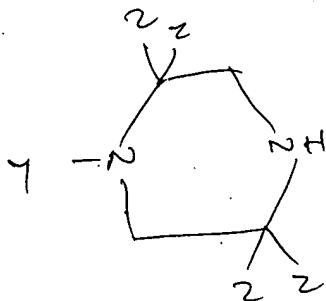
Title of Invention: Isotopically enriched N-substituted piperazineInventors (please provide full names): Peppin et al.

Earliest Priority Date: \_\_\_\_\_

## Search Topic:

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known.

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.



$\gamma$ , Z are as defined in claim 1.

Note

5/15/8/06

STN

ZSR

10 PR

15 orl

=> b reg

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STRUCTURE FILE UPDATES: 8 AUG 2006 HIGHEST RN 899769-93-8  
 DICTIONARY FILE UPDATES: 8 AUG 2006 HIGHEST RN 899769-93-8

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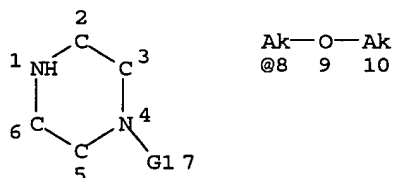
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=> d que sta l17

L10 STR



VAR G1=AK/8

NODE ATTRIBUTES:

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DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

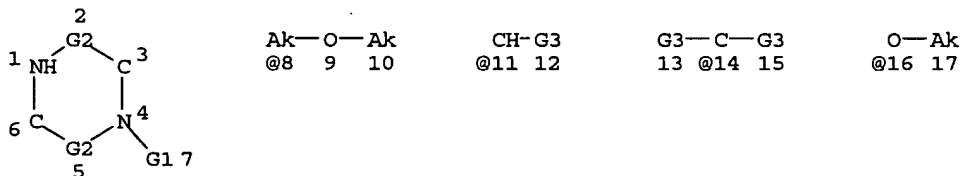
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STEREO ATTRIBUTES: NONE

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L15 STR



VAR G1=AK/8

VAR G2=CH2/11/14/CD2/CT2

VAR G3=X/AK/8/16

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
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NUMBER OF NODES IS 17

STEREO ATTRIBUTES: NONE  
L17 70 SEA FILE=REGISTRY SUB=L14 SSS FUL L15

100.0% PROCESSED 70 ITERATIONS 70 ANSWERS  
SEARCH TIME: 00.00.01

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FILE COVERS 1907 - 9 Aug 2006 VOL 145 ISS 7  
FILE LAST UPDATED: 8 Aug 2006 (20060808/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

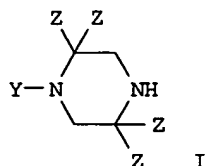
This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d bib abs fhitr hitr retable l20 tot

L20 ANSWER 1 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2005:592130 HCAPLUS  
DN 143:115574  
TI Preparation of isotopically enriched N-substituted piperazines  
IN Pappin, Darryl J. C.; Pillai, Sasi; Coull, James M.  
PA Applera Corp., USA  
SO U.S. Pat. Appl. Publ., 29 pp.  
CODEN: USXXCO  
DT Patent  
LA English  
FAN.CNT 6

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US2005148773	A1	20050707	2004US-0751388	20040105 <--
	WO2005068446	A1	20050728	2005WO-US00223	20050105 <--
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	2004US-0751387	A	20040105	
	2004US-0751388	A	20040105	<--
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OS	MARPAT 143:115574			
GI				

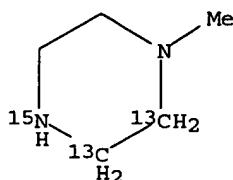


AB Isotopically enriched N-substituted piperazines (I) or salts thereof, comprising one or more heavy atom isotopes (Y = straight chain or branched C1-6 alkyl or C1-6 alkyl ether group wherein the carbon atoms of the alkyl group or alkyl ether group each independently comprise linked hydrogen, deuterium or fluorine atoms; Z = independently H, F, Cl, Br, iodine, an amino acid side chain, a straight chain or branched C1-6 alkyl group that may optionally contain a substituted or unsubstituted aryl group wherein the carbon atoms of the alkyl and aryl groups each independently comprise linked H or F atoms, a straight chain or branched C1-6 alkyl ether group that may optionally contain a substituted or unsubstituted aryl group (wherein the carbon atoms of the alkyl and aryl groups each independently comprise linked hydrogen or fluorine atoms), or a straight chain or branched C1-6 alkoxy group that may optionally contain a substituted or unsubstituted aryl group; wherein the carbon atoms of the alkyl and aryl groups each independently comprise linked hydrogen or fluorine atoms; wherein the N-methylpiperazine is isotopically enriched with either of <sup>13</sup>C and/or <sup>15</sup>N) are prepared N-substituted piperazines can be used as intermediates in the synthesis of N-substituted piperazine acetic acids which in turn can be used as intermediates in the synthesis of active esters of N-substituted piperazine acetic acid. The active esters of N-substituted piperazine acetic acid can be used as labeling reagents to prepare a set of isobaric labeling reagents. The set of isobaric labeling reagents can be used to label analytes such as peptides, proteins, amino acids, oligonucleotides, DNA, RNA, lipids, carbohydrates, steroids, small mols. and the like (no data). Thus, to a stirring solution of 1.18 g (11.83 mmol) N-methylpiperazine in 15 mL toluene at room temperature was added 1 g (5.91 mmol) of Et bromoacetate-1,2-<sup>13</sup>C dropwise, over a period of 15 min. The reaction mixture was then heated in an oil bath at 90° for 4 h, cooled to room temperature, filtered to remove the off-white solid to give, after workup on the combined filtrate and washings, 1.10 g (quant.) of 4-methylpiperazine-1-acetic acid Et ester-1,2-<sup>13</sup>C (II) as an off-white oil. II (1.1 g) was refluxed in water for 24 h to give 780 mg 4-methylpiperazine-1-acetic acid-1,2-<sup>13</sup>C.

IT 856188-37-9P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation of isotopically enriched N-substituted piperazines as isobaric labeling reagents)

RN 856188-37-9 HCAPLUS

CN Piperazine-2,3-<sup>13</sup>C2-1-<sup>15</sup>N, 4-methyl- (9CI) (CA INDEX NAME)



IT 856188-37-9P 856188-43-7P 856188-49-3P  
 857502-99-9P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation of isotopically enriched N-substituted piperazines as isobaric  
 labeling reagents)

IT 856188-38-0P 856188-44-8P 856188-50-6P  
 857503-04-9P 857503-05-0P 857503-06-1P  
 857503-07-2P 857503-08-3P 857503-09-4P  
 857503-10-7P 857503-11-8P 857503-12-9P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of isotopically enriched N-substituted piperazines as isobaric  
 labeling reagents)

L20 ANSWER 2 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:592129 HCAPLUS

DN 143:97398

TI Preparation of active esters of N-substituted piperazine acetic acids,  
 including isotopically enriched versions

IN Dey, Subhakar; Pappin, Darryl J. C.; Purkayastha, Subhasish;  
 Pillai, Sasi; Coull, James M.

PA Applera Corp., USA

SO U.S. Pat. Appl. Publ., 33 pp.

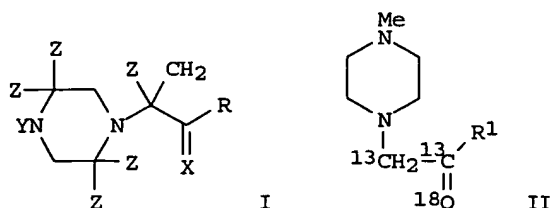
CODEN: USXXCO

DT Patent

LA English

FAN.CNT 6

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	WO2005068446	A1	20050728	2005WO-US00223	20050105 <--
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	GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,				
	LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,				
	NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,				
	TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW,				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,				
	AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,				
	EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT,				
	RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,				
	MR, NE, SN, TD, TG				
PRAI	2004US-0751353	A	20040105		
	2004US-0751354	A	20040105		
	2004US-0751387	A	20040105		
	2004US-0751388	A	20040105	<--	
	2004US-0822639	A	20040412		
	2004US-0852730	A	20040524		
OS	MARPAT 143:97398				
GI					



AB In some embodiments, this invention pertains to active esters of N-substituted piperazine acetic acid I (R = leaving group; X = O, S; Y = C1-C6 alkyl, C1-C6 alkyl ether; Z = H, 2H, F, Cl, Br, iodide, amino acid side chain, C1-C6 alkyl, C1-C6 alkyl ether), including isotopically enriched versions thereof. In some embodiments, this invention pertains to methods for the preparation of active esters of N-substituted piperazine acetic acid, including isotopically enriched versions thereof. For example, the isotopically labeled N-methylpiperazine II (R1 = 18OH) reacted with the trifluoroacetic acid ester of N-hydroxysuccinimide to give the succinate II (R1 = OR2, R2 = succinimido).

IT 856188-38-0P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of active esters of N-substituted piperazine acetic acids and their labeled derivs.)

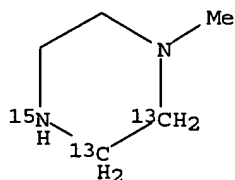
RN 856188-38-0 HCAPLUS

CN Piperazine-2,3-13C2-1-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)

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CRN 856188-37-9

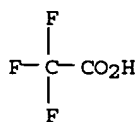
CMF C5 H12 N2



CM 2

CRN 76-05-1

CMF C2 H F3 O2



IT 856188-38-0P 856188-44-8P 856188-50-6P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of active esters of N-substituted piperazine acetic acids and their labeled derivs.)

L20 ANSWER 3 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:592027 HCAPLUS

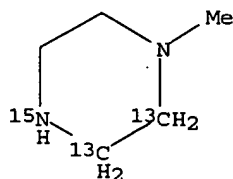
DN 143:93642  
 TI Mixtures of isobarically labeled analytes and fragments ions derived therefrom  
 IN Pappin, Darryl J. C.; Purkayastha, Subhasish; Coull, James M.  
 PA Applera Corp., USA  
 SO U.S. Pat. Appl. Publ., 36 pp., Cont.-in-part of U.S. Ser. No. 751,353.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 6

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US2005147985	A1	20050707	2004US-0822639	20040412
	US2005147982	A1	20050707	2004US-0751353	20040105
	US2005148087	A1	20050707	2004US-0852730	20040524
	WO2005068446	A1	20050728	2005WO-US00223	20050105 <--
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	RW:			BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG	
PRAI	2004US-0751353	A2	20040105		
	2004US-0751354	A	20040105		
	2004US-0751387	A	20040105		
	2004US-0751388	A	20040105	<--	
	2004US-0822639	A2	20040412		
	2004US-0852730	A	20040524		
OS	MARPAT 143:93642				
AB	This invention pertains to mixts. of isobarically labeled analytes and fragment ions thereof.				
IT	856188-38-0P RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (mixts. of isobarically labeled analytes and fragments ions derived therefrom)				
RN	856188-38-0 HCAPLUS				
CN	Piperazine-2,3-13C2-1-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)				

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CRN 856188-37-9

CMF C5 H12 N2

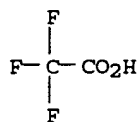


CM 2

CRN 76-05-1

CMF C2 H F3 O2





IT 856188-38-0P 856188-44-8P 856188-50-6P  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (mixts. of isobarically labeled analytes and fragments ions derived  
 therefrom)

L20 ANSWER 4 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:588426 HCAPLUS

DN 143:115568

TI Preparation of isotopically enriched N-substituted piperazine-1-acetic  
 acids

IN Dey, Subhakar; Pappin, Darryl J. c.; Purkayastha, Subhasish;

Pillai, Sasi; Coull, James M.

PA Applera Corp., USA

SO U.S. Pat. Appl. Publ., 29 pp.

CODEN: USXXCO

DT Patent

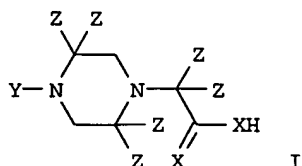
LA English

FAN.CNT 6

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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	WO2005068446	A1	20050728	2005WO-US00223	20050105 <--
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RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
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OS MARPAT 143:115568

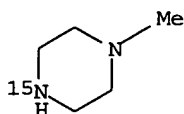
GI



AB Isotopically enriched N-substituted piperazine-1-acetic acids (I) or salts

thereof, comprising one or more heavy atom isotopes [X = O, S; Y = straight chain or branched C1-6 alkyl or C1-6 alkyl ether group wherein the carbon atoms of the alkyl group or alkyl ether group each independently comprise linked hydrogen, deuterium or F atoms; Z = independently H, deuterium, F, Cl, Br, iodine, an amino acid side chain, a straight chain or branched C1-6 alkyl group that may optionally contain a substituted or unsubstituted aryl group (wherein the carbon atoms of the alkyl and aryl groups each independently comprise linked H, deuterium or F atoms), a straight chain or branched C1-6 alkyl ether group that may optionally contain a substituted or unsubstituted aryl group wherein the carbon atoms of the alkyl and aryl groups each independently comprise linked H, deuterium or F atoms, or a straight chain or branched C1-6 alkoxy group that may optionally contain a substituted or unsubstituted aryl group (wherein the carbon atoms of the alkyl and aryl groups each independently comprise linked H, deuterium or F atoms)] are prepared N-substituted piperazines can be used as intermediates in the synthesis of N-substituted piperazine acetic acids which in turn can be used as intermediates in the synthesis of active esters of N-substituted piperazine acetic acid. The active esters of N-substituted piperazine acetic acid can be used as labeling reagents to prepare a set of isobaric labeling reagents. The set of isobaric labeling reagents can be used to label analytes such as peptides, proteins, amino acids, oligonucleotides, DNA, RNA, lipids, carbohydrates, steroids, small mols. and the like. Thus, to a stirring solution of 1.18 g (11.83 mmol) N-methylpiperazine in 15 mL toluene at room temperature was added 1 g (5.91 mmol) of Et bromoacetate-1,2-<sup>13</sup>C dropwise, over a period of 15 min. The reaction mixture was then heated in an oil bath at 90° for 4 h, cooled to room temperature, filtered to remove the off-white solid to give, after workup on the combined filtrate and washings, 1.10 g (quant.) of 4-methylpiperazine-1-acetic acid Et ester-1,2-<sup>13</sup>C (II) as an off-white oil. II (1.1 g) was refluxed in water for 24 h to give 780 mg 4-methylpiperazine-1-acetic acid-1,2-<sup>13</sup>C.

IT 857502-99-9P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation of isotopically enriched N-substituted piperazine-1-acetic acids as isobaric labeling reagents)  
 RN 857502-99-9 HCAPLUS  
 CN Piperazine-15N, 4-methyl-, dihydrochloride (9CI) (CA INDEX NAME)



● 2 HCl

IT 857502-99-9P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation of isotopically enriched N-substituted piperazine-1-acetic acids as isobaric labeling reagents)  
 IT 856188-37-9P 856188-38-0P 856188-43-7P  
 856188-44-8P 856188-49-3P 856188-50-6P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of isotopically enriched N-substituted piperazine-1-acetic acids as isobaric labeling reagents)

L20 ANSWER 5 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2005:588349 HCAPLUS  
 DN 143:112150

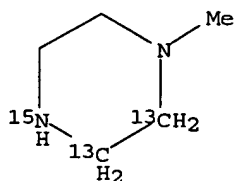
TI Isobarically labeled analytes and fragment ions derived therefrom  
 IN Pappin, Darryl J. C.; Purkayastha, Subhasish; Coull, James  
 M.  
 PA Applera Corporation, USA  
 SO U.S. Pat. Appl. Publ., 88 pp., Cont.-in-part of U.S. Ser. No. 822,639.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 6

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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	WO2005068446	A1	20050728	2005WO-US00223	20050105 <--
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PRAI	2004US-0751353	A2	20040105		
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	2004US-0751387	A	20040105		
	2004US-0751388	A	20040105	<--	
	2004US-0852730	A	20040524		
OS	MARPAT 143:112150				
AB	This invention pertains to isobarically labeled analytes and fragment ions thereof.				
IT	856188-38-0P RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (isobarically labeled analytes and fragment ions derived therefrom)				
RN	856188-38-0 HCAPLUS				
CN	Piperazine-2,3- <sup>13</sup> C <sub>2</sub> -1- <sup>15</sup> N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)				

CM 1

CRN 856188-37-9

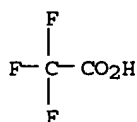
CMF C5 H12 N2



CM 2

CRN 76-05-1

CMF C2 H F3 O2



IT 856188-38-0P 856188-44-8P 856188-50-6P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (isobarically labeled analytes and fragment ions derived therefrom)

IT 741683-84-1P, 1-Piperazineacetic-carboxy-13C acid  
 741683-85-2P, 1-Piperazineacetic- $\alpha$ -13C acid  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (isobarically labeled analytes and fragment ions derived therefrom)

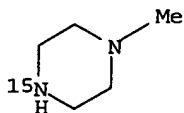
L20 ANSWER 6 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2005:588336 HCAPLUS  
 DN 143:93635  
 TI Mixtures of isobarically labeled analytes and fragments ions derived  
 therefrom  
 IN Pappin, Darryl J. C.; Purkayastha, Subhasish; Coull, James  
 M.  
 PA Applera Corporation, USA  
 SO U.S. Pat. Appl. Publ., 29 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 6

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US2005147982	A1	20050707	2004US-0751353	20040105
	US2005147985	A1	20050707	2004US-0822639	20040412
	US2005148087	A1	20050707	2004US-0852730	20040524
	WO2005068446	A1	20050728	2005WO-US00223	20050105 <--
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PRAI	2004US-0751353	A2	20040105		
	2004US-0751354	A	20040105		
	2004US-0751387	A	20040105		
	2004US-0751388	A	20040105	<--	
	2004US-0822639	A2	20040412		
	2004US-0852730	A	20040524		
AB	This invention pertains to mixts. of isobarically labeled analytes and fragment ions thereof.				
IT	856188-50-6P RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (mixts. of isobarically labeled analytes and fragments ions derived therefrom)				
RN	856188-50-6 HCAPLUS				
CN	Piperazine-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)				

CM 1

CRN 856188-49-3

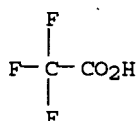
CMF C5 H12 N2



CM 2

CRN 76-05-1

CMF C2 H F3 O2



IT 856188-50-6P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(mixts. of isobarically labeled analytes and fragments ions derived therefrom)

IT 856188-38-0P 856188-44-8P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(mixts. of isobarically labeled analytes and fragments ions derived therefrom)

L20 ANSWER 7 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:681717 HCAPLUS

DN 141:202794

TI Methods, mixtures, kits and compositions pertaining to analyte determination

IN Pappin, Darryl J. C.; Bartlet-Jones, Michael

PA Applera Corporation, USA

SO PCT Int. Appl., 105 pp.

CODEN: PIXXD2

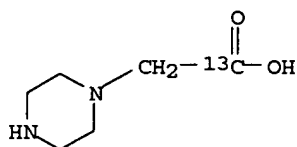
DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO2004070352	A2	20040819	2004WO-US02077	20040127
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RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
AU2004209401-	A1	20040819	2004AU-0209401	20040127
CA---2488584	AA	20040819	2004CA-2488584	20040127
US2004219685	A1	20041104	2004US-0765264	20040127
US2004220412	A1	20041104	2004US-0765267	20040127
US2004219686	A1	20041104	2004US-0765458	20040127
EP---1588145	A2	20051026	2004EP-0705571	20040127
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK			
US2006105416	A1	20060518	2005US-0319685	20051228

PRAI 2003US-443612P P 20030130  
 2004US-0765267 A1 20040127  
 2004WO-US02077 W 20040127  
 AB This invention pertains to methods, mixts., kits and/or compns. for the determination of analytes by mass anal. using unique labeling reagents or sets of unique labeling reagents. The labeling reagents can be isomeric or isobaric and can be used to produce mixts. suitable for multiplex anal. of the labeled analytes.  
 IT 741683-84-1P, 1-Piperazineacetic-carboxy-13C acid  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (methods, mixts., kits and compns. pertaining to analyte determination)  
 RN 741683-84-1 HCAPLUS  
 CN 1-Piperazineacetic-carboxy-13C acid (9CI) (CA INDEX NAME)



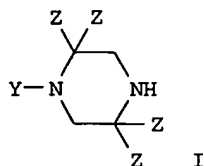
IT 741683-84-1P, 1-Piperazineacetic-carboxy-13C acid  
 741683-85-2P, 1-Piperazineacetic- $\alpha$ -13C acid  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (methods, mixts., kits and compns. pertaining to analyte determination)

=> d bib abs hitstr retable 120 tot

L20 ANSWER 1 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2005:592130 HCAPLUS  
 DN 143:115574  
 TI Preparation of isotopically enriched N-substituted piperazines  
 IN Pappin, Darryl J. C.; Pillai, Sasi; Coull, James M.  
 PA Applera Corp., USA  
 SO U.S. Pat. Appl. Publ., 29 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 6

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US2005148773	A1	20050707	2004US-0751388	20040105 <--
WO2005068446	A1	20050728	2005WO-US00223	20050105 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI 2004US-0751353	A	20040105		
2004US-0751354	A	20040105		
2004US-0751387	A	20040105		
2004US-0751388	A	20040105	<--	
2004US-0822639	A	20040412		
2004US-0852730	A	20040524		

OS MARPAT 143:115574  
GI



AB Isotopically enriched N-substituted piperazines (I) or salts thereof, comprising one or more heavy atom isotopes (Y = straight chain or branched C1-6 alkyl or C1-6 alkyl ether group wherein the carbon atoms of the alkyl group or alkyl ether group each independently comprise linked hydrogen, deuterium or fluorine atoms; Z = independently H, F, Cl, Br, iodine, an amino acid side chain, a straight chain or branched C1-6 alkyl group that may optionally contain a substituted or unsubstituted aryl group wherein the carbon atoms of the alkyl and aryl groups each independently comprise linked H or F atoms, a straight chain or branched C1-6 alkyl ether group that may optionally contain a substituted or unsubstituted aryl group (wherein the carbon atoms of the alkyl and aryl groups each independently comprise linked hydrogen or fluorine atoms), or a straight chain or branched C1-6 alkoxy group that may optionally contain a substituted or unsubstituted aryl group; wherein the carbon atoms of the alkyl and aryl groups each independently comprise linked hydrogen or fluorine atoms; wherein the N-methylpiperazine is isotopically enriched with either of <sup>13</sup>C and/or <sup>15</sup>N) are prepared N-substituted piperazines can be used as intermediates in the synthesis of N-substituted piperazine acetic acids which in turn can be used as intermediates in the synthesis of active esters of N-substituted piperazine acetic acid. The active esters of N-substituted piperazine acetic acid can be used as labeling reagents to prepare a set of isobaric labeling reagents. The set of isobaric labeling reagents can be used to label analytes such as peptides, proteins, amino acids, oligonucleotides, DNA, RNA, lipids, carbohydrates, steroids, small mols. and the like (no data). Thus, to a stirring solution of 1.18 g (11.83 mmol) N-methylpiperazine in 15 mL toluene at room temperature was added 1 g (5.91 mmol) of Et bromoacetate-1,2-<sup>13</sup>C dropwise, over a period of 15 min. The reaction mixture was then heated in an oil bath at 90° for 4 h, cooled to room temperature, filtered to remove the off-white solid to give, after workup on the combined filtrate and washings, 1.10 g (quant.) of 4-methylpiperazine-1-acetic acid Et ester-1,2-<sup>13</sup>C (II) as an off-white oil. II (1.1 g) was refluxed in water for 24 h to give 780 mg 4-methylpiperazine-1-acetic acid-1,2-<sup>13</sup>C.

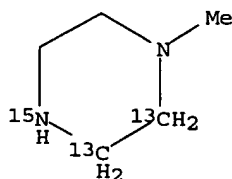
IT 856188-37-9P 856188-43-7P 856188-49-3P  
857502-99-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

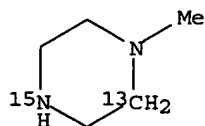
(preparation of isotopically enriched N-substituted piperazines as isobaric labeling reagents)

RN 856188-37-9 HCAPLUS

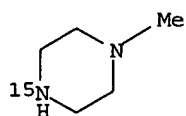
CN Piperazine-2,3-<sup>13</sup>C2-1-<sup>15</sup>N, 4-methyl- (9CI) (CA INDEX NAME)



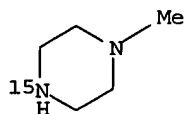
RN 856188-43-7 HCAPLUS  
 CN Piperazine-3-<sup>13</sup>C-1-<sup>15</sup>N, 4-methyl- (9CI) (CA INDEX NAME)



RN 856188-49-3 HCAPLUS  
 CN Piperazine-1<sup>5</sup>N, 4-methyl- (9CI) (CA INDEX NAME)



RN 857502-99-9 HCAPLUS  
 CN Piperazine-1<sup>5</sup>N, 4-methyl-, dihydrochloride (9CI) (CA INDEX NAME)



● 2 HCl

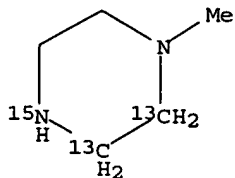
IT 856188-38-0P 856188-44-8P 856188-50-6P  
 857503-04-9P 857503-05-0P 857503-06-1P  
 857503-07-2P 857503-08-3P 857503-09-4P  
 857503-10-7P 857503-11-8P 857503-12-9P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of isotopically enriched N-substituted piperazines as isobaric  
 labeling reagents)

RN 856188-38-0 HCAPLUS  
 CN Piperazine-2,3-<sup>13</sup>C-1-<sup>15</sup>N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA  
 INDEX NAME)

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CRN 856188-37-9

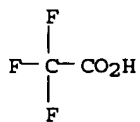
CMF C5 H12 N2



CM 2



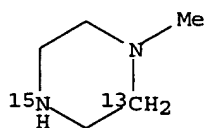
CRN 76-05-1  
CMF C2 H F3 O2



RN 856188-44-8 HCAPLUS  
CN Piperazine-3-13C-1-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)

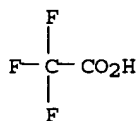
CM 1

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CMF C5 H12 N2



CM 2

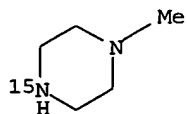
CRN 76-05-1  
CMF C2 H F3 O2



RN 856188-50-6 HCAPLUS  
CN Piperazine-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)

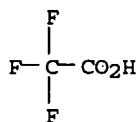
CM 1

CRN 856188-49-3  
CMF C5 H12 N2

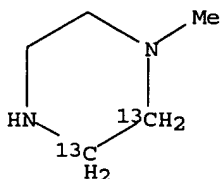


CM 2

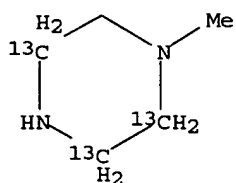
CRN 76-05-1  
CMF C2 H F3 O2



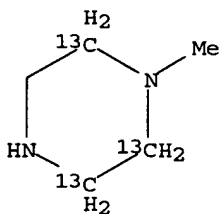
RN 857503-04-9 HCAPLUS  
 CN Piperazine-2,3-<sup>13</sup>C<sub>2</sub>, 1-methyl- (9CI) (CA INDEX NAME)



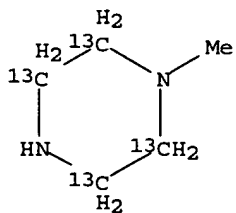
RN 857503-05-0 HCAPLUS  
 CN Piperazine-<sup>13</sup>C<sub>3</sub>, 1-methyl- (9CI) (CA INDEX NAME)



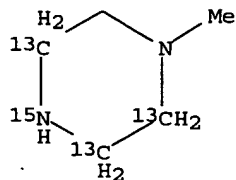
RN 857503-06-1 HCAPLUS  
 CN Piperazine-<sup>13</sup>C<sub>3</sub>, 4-methyl- (9CI) (CA INDEX NAME)



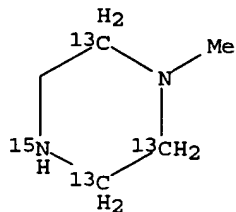
RN 857503-07-2 HCAPLUS  
 CN Piperazine-<sup>13</sup>C<sub>4</sub>, 1-methyl- (9CI) (CA INDEX NAME)



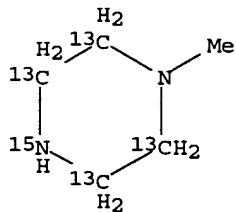
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 CN Piperazine-2,3,6-<sup>13</sup>C<sub>3</sub>-1-<sup>15</sup>N, 4-methyl- (9CI) (CA INDEX NAME)



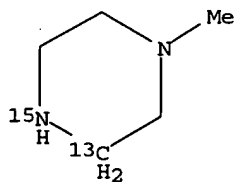
RN 857503-09-4 HCAPLUS  
 CN Piperazine-2,3,5-13C3-1-15N, 4-methyl- (9CI) (CA INDEX NAME)



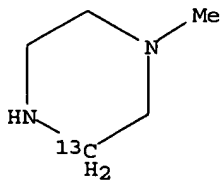
RN 857503-10-7 HCAPLUS  
 CN Piperazine-13C4-15N, 4-methyl- (9CI) (CA INDEX NAME)



RN 857503-11-8 HCAPLUS  
 CN Piperazine-2-13C-1-15N, 4-methyl- (9CI) (CA INDEX NAME)



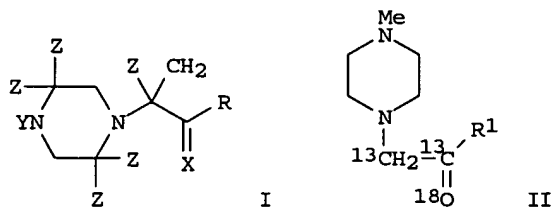
RN 857503-12-9 HCAPLUS  
 CN Piperazine-13C, 4-methyl- (9CI) (CA INDEX NAME)



L20 ANSWER 2 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2005:592129 HCAPLUS

DN 143:97398  
 TI Preparation of active esters of N-substituted piperazine acetic acids,  
 including isotopically enriched versions  
 IN Dey, Subhakar; Pappin, Darryl J. C.; Purkayastha, Subhasish;  
 Pillai, Sasi; Coull, James M.  
 PA Applera Corp., USA  
 SO U.S. Pat. Appl. Publ., 33 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 6

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US2005148771	A1	20050707	2004US-0751354	20040105
	WO2005068446	A1	20050728	2005WO-US00223	20050105 <--
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	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI	2004US-0751353	A	20040105		
	2004US-0751354	A	20040105		
	2004US-0751387	A	20040105		
	2004US-0751388	A	20040105	<--	
	2004US-0822639	A	20040412		
	2004US-0852730	A	20040524		
OS	MARPAT 143:97398				
GI					



AB In some embodiments, this invention pertains to active esters of N-substituted piperazine acetic acid I (R = leaving group; X = O, S; Y = C1-C6 alkyl, C1-C6 alkyl ether; Z = H, 2H, F, Cl, Br, iodide, amino acid side chain, C1-C6 alkyl, C1-C6 alkyl ether), including isotopically enriched versions thereof. In some embodiments, this invention pertains to methods for the preparation of active esters of N-substituted piperazine acetic acid, including isotopically enriched versions thereof. For example, the isotopically labeled N-methylpiperazine II (R1 = 18OH) reacted with the trifluoroacetic acid ester of N-hydroxysuccinimide to give the succinate II (R1 = OR2, R2 = succinimido).

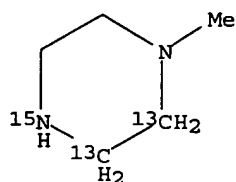
IT 856188-38-0P 856188-44-8P 856188-50-6P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of active esters of N-substituted piperazine acetic acids and their labeled derivs.)

RN 856188-38-0 HCAPLUS

CN Piperazine-2,3-13C2-1-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)

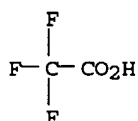
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CRN 856188-37-9  
CMF C5 H12 N2



CM 2

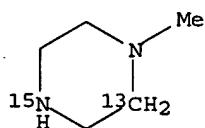
CRN 76-05-1  
CMF C2 H F3 O2



RN 856188-44-8 HCAPLUS  
CN Piperazine-3-13C-1-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)

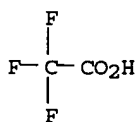
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CRN 856188-43-7  
CMF C5 H12 N2



CM 2

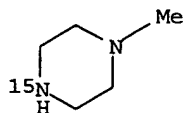
CRN 76-05-1  
CMF C2 H F3 O2



RN 856188-50-6 HCAPLUS  
CN Piperazine-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)

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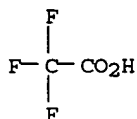
CRN 856188-49-3  
CMF C5 H12 N2



CM 2

CRN 76-05-1

CMF C2 H F3 O2



L20 ANSWER 3 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:592027 HCAPLUS

DN 143:93642

TI Mixtures of isobarically labeled analytes and fragments ions derived therefrom

IN Pappin, Darryl J. C.; Purkayastha, Subhasish; Coull, James M.

PA Applera Corp., USA

SO U.S. Pat. Appl. Publ., 36 pp., Cont.-in-part of U.S. Ser. No. 751,353.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 6

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US2005147985	A1	20050707	2004US-0822639	20040412
	US2005147982	A1	20050707	2004US-0751353	20040105
	US2005148087	A1	20050707	2004US-0852730	20040524
	WO2005068446	A1	20050728	2005WO-US00223	20050105 <--
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RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI	2004US-0751353	A2	20040105		
	2004US-0751354	A	20040105		
	2004US-0751387	A	20040105		
	2004US-0751388	A	20040105	<--	
	2004US-0822639	A2	20040412		
	2004US-0852730	A	20040524		

OS MARPAT 143:93642

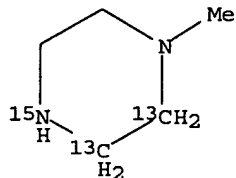
AB This invention pertains to mixts. of isobarically labeled analytes and fragment ions thereof.

IT 856188-38-0P 856188-44-8P 856188-50-6P

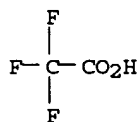
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

RN 856188-38-0 HCAPLUS  
CN Piperazine-2,3-13C2-1-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA  
INDEX NAME)

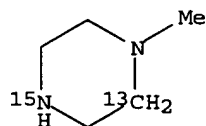
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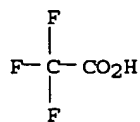
CMF C2 H F3 O2



CMF C5 H12 N2



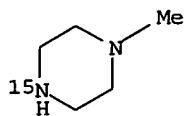
CMF C2 H F3 O2



RN 856188-50-6 HCAPLUS  
 CN Piperazine-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)

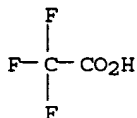
CM 1

CRN 856188-49-3  
 CMF C5 H12 N2



CM 2

CRN 76-05-1  
 CMF C2 H F3 O2

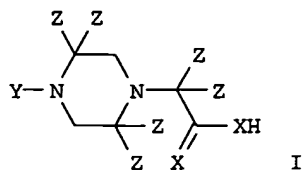


L20 ANSWER 4 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2005:588426 HCAPLUS  
 DN 143:115568  
 TI Preparation of isotopically enriched N-substituted piperazine-1-acetic acids  
 IN Dey, Subhakar; Pappin, Darryl J. c.; Purkayastha, Subhasish; Pillai, Sasi; Coull, James M.  
 PA Applera Corp., USA  
 SO U.S. Pat. Appl. Publ., 29 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 6

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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	WO2005068446	A1	20050728	2005WO-US00223	20050105 <--
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	RW:				
	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI	2004US-0751353	A	20040105		
	2004US-0751354	A	20040105		
	2004US-0751387	A	20040105		
	2004US-0751388	A	20040105	<--	
	2004US-0822639	A	20040412		
	2004US-0852730	A	20040524		
OS	MARPAT 143:115568				



GI



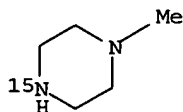
AB Isotopically enriched N-substituted piperazine-1-acetic acids (I) or salts thereof, comprising one or more heavy atom isotopes [X = O, S; Y = straight chain or branched C1-6 alkyl or C1-6 alkyl ether group wherein the carbon atoms of the alkyl group or alkyl ether group each independently comprise linked hydrogen, deuterium or F atoms; Z = independently H, deuterium, F, Cl, Br, iodine, an amino acid side chain, a straight chain or branched C1-6 alkyl group that may optionally contain a substituted or unsubstituted aryl group (wherein the carbon atoms of the alkyl and aryl groups each independently comprise linked H, deuterium or F atoms), a straight chain or branched C1-6 alkyl ether group that may optionally contain a substituted or unsubstituted aryl group wherein the carbon atoms of the alkyl and aryl groups each independently comprise linked H, deuterium or F atoms, or a straight chain or branched C1-6 alkoxy group that may optionally contain a substituted or unsubstituted aryl group (wherein the carbon atoms of the alkyl and aryl groups each independently comprise linked H, deuterium or F atoms)] are prepared N-substituted piperazines can be used as intermediates in the synthesis of N-substituted piperazine acetic acids which in turn can be used as intermediates in the synthesis of active esters of N-substituted piperazine acetic acid. The active esters of N-substituted piperazine acetic acid can be used as labeling reagents to prepare a set of isobaric labeling reagents. The set of isobaric labeling reagents can be used to label analytes such as peptides, proteins, amino acids, oligonucleotides, DNA, RNA, lipids, carbohydrates, steroids, small mols. and the like. Thus, to a stirring solution of 1.18 g (11.83 mmol) N-methylpiperazine in 15 mL toluene at room temperature was added 1 g (5.91 mmol) of Et bromoacetate-1,2-13C dropwise, over a period of 15 min. The reaction mixture was then heated in an oil bath at 90° for 4 h, cooled to room temperature, filtered to remove the off-white solid to give, after workup on the combined filtrate and washings, 1.10 g (quant.) of 4-methylpiperazine-1-acetic acid Et ester-1,2-13C (II) as an off-white oil. II (1.1 g) was refluxed in water for 24 h to give 780 mg 4-methylpiperazine-1-acetic acid-1,2-13C.

IT 857502-99-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation of isotopically enriched N-substituted piperazine-1-acetic acids as isobaric labeling reagents)

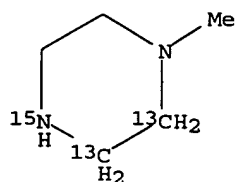
RN 857502-99-9 HCAPLUS

CN Piperazine-15N, 4-methyl-, dihydrochloride (9CI) (CA INDEX NAME)



● 2 HCl

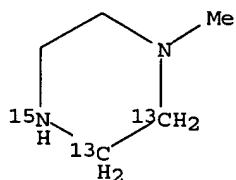
IT 856188-37-9P 856188-38-0P 856188-43-7P  
856188-44-8P 856188-49-3P 856188-50-6P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of isotopically enriched N-substituted piperazine-1-acetic  
acids as isobaric labeling reagents)  
RN 856188-37-9 HCAPLUS  
CN Piperazine-2,3-<sup>13</sup>C<sub>2</sub>-1-<sup>15</sup>N, 4-methyl- (9CI) (CA INDEX NAME)



RN 856188-38-0 HCAPLUS  
CN Piperazine-2,3-<sup>13</sup>C<sub>2</sub>-1-<sup>15</sup>N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA  
INDEX NAME)

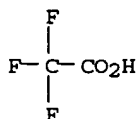
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CRN 856188-37-9  
CMF C5 H12 N2

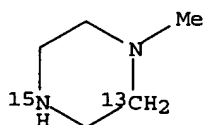


CM 2

CRN 76-05-1  
CMF C2 H F3 O2



RN 856188-43-7 HCAPLUS  
CN Piperazine-3-<sup>13</sup>C-1-<sup>15</sup>N, 4-methyl- (9CI) (CA INDEX NAME)

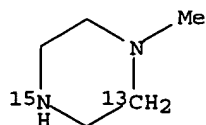


RN 856188-44-8 HCAPLUS  
CN Piperazine-3-<sup>13</sup>C-1-<sup>15</sup>N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX  
NAME)

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CRN 856188-43-7

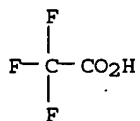
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CM 2

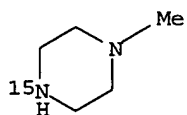
CRN 76-05-1

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RN 856188-49-3 HCAPLUS

CN Piperazine-15N, 4-methyl- (9CI) (CA INDEX NAME)



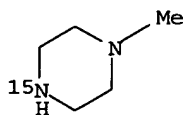
RN 856188-50-6 HCAPLUS

CN Piperazine-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)

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CRN 856188-49-3

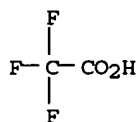
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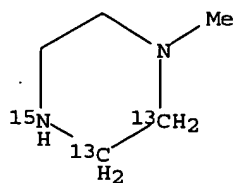
CRN 76-05-1

CMF C2 H F3 O2



L20 ANSWER 5 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2005:588349 HCAPLUS  
 DN 143:112150  
 TI Isobarically labeled analytes and fragment ions derived therefrom  
 IN Pappin, Darryl J. C.; Purkayastha, Subhasish; Coull, James  
 M.  
 PA Applera Corporation, USA  
 SO U.S. Pat. Appl. Publ., 88 pp., Cont.-in-part of U.S. Ser. No. 822,639.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 6

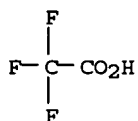
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US2005147982	A1	20050707	2004US-0751353	20040105
US2005147985	A1	20050707	2004US-0822639	20040412
WO2005068446	A1	20050728	2005WO-US00223	20050105 <--
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2004US-0751388	A	20040105	<--	
2004US-0852730	A	20040524		
OS MARPAT 143:112150				
AB This invention pertains to isobarically labeled analytes and fragment ions thereof.				
IT 856188-38-0P 856188-44-8P 856188-50-6P				
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)				
(isobarically labeled analytes and fragment ions derived therefrom)				
RN 856188-38-0 HCAPLUS				
CN Piperazine-2,3-13C2-1-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)				
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CRN 856188-37-9				
CMF C5 H12 N2				



CM 2

CRN 76-05-1

CMF C2 H F3 O2



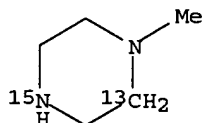
RN 856188-44-8 HCAPLUS

CN Piperazine-3-13C-1-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)

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CRN 856188-43-7

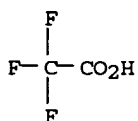
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CRN 76-05-1

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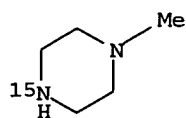
RN 856188-50-6 HCAPLUS

CN Piperazine-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)

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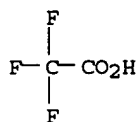
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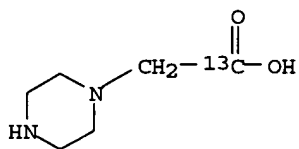
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CRN 76-05-1

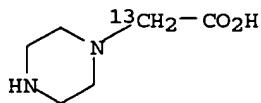
CMF C2 H F3 O2



IT 741683-84-1P, 1-Piperazineacetic-carboxy-13C acid  
 741683-85-2P, 1-Piperazineacetic- $\alpha$ -13C acid  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (isobarically labeled analytes and fragment ions derived therefrom)  
 RN 741683-84-1 HCAPLUS  
 CN 1-Piperazineacetic-carboxy-13C acid (9CI) (CA INDEX NAME)



RN 741683-85-2 HCAPLUS  
 CN 1-Piperazineacetic- $\alpha$ -13C acid (9CI) (CA INDEX NAME)



L20 ANSWER 6 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2005:588336 HCAPLUS  
 DN 143:93635  
 TI Mixtures of isobarically labeled analytes and fragments ions derived  
 therefrom  
 IN Pappin, Darryl J. C.; Purkayastha, Subhasish; Coull, James  
 M.  
 PA Applera Corporation, USA  
 SO U.S. Pat. Appl. Publ., 29 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 6

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US2005147982	A1	20050707	2004US-0751353	20040105

US2005147985 A1 20050707 2004US-0822639 20040412  
 US2005148087 A1 20050707 2004US-0852730 20040524  
 WO2005068446 A1 20050728 2005WO-US00223 20050105 <--

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 GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
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 NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,  
 TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,  
 AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,  
 EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT,  
 RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,  
 MR, NE, SN, TD, TG

PRAI 2004US-0751353 A2 20040105  
 2004US-0751354 A 20040105  
 2004US-0751387 A 20040105  
 2004US-0751388 A 20040105 <--  
 2004US-0822639 A2 20040412  
 2004US-0852730 A 20040524

AB This invention pertains to mixts. of isobarically labeled analytes and fragment ions thereof.

IT 856188-50-6P  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (mixts. of isobarically labeled analytes and fragments ions derived therefrom)

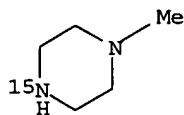
RN 856188-50-6 HCAPLUS

CN Piperazine-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)

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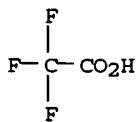
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CM 2

CRN 76-05-1

CMF C2 H F3 O2



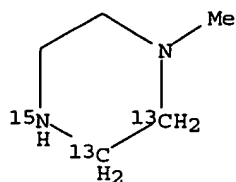
IT 856188-38-0P 856188-44-8P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (mixts. of isobarically labeled analytes and fragments ions derived therefrom)

RN 856188-38-0 HCAPLUS

CN Piperazine-2,3-13C2-1-15N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)

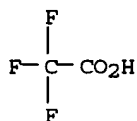
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CRN 856188-37-9  
CMF C5 H12 N2



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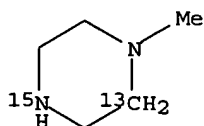
CRN 76-05-1  
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RN 856188-44-8 HCAPLUS  
CN Piperazine-3-<sup>13</sup>C-1-<sup>15</sup>N, 4-methyl-, bis(trifluoroacetate) (9CI) (CA INDEX NAME)

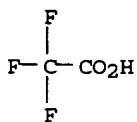
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CRN 856188-43-7  
CMF C5 H12 N2



CM 2

CRN 76-05-1  
CMF C2 H F3 O2

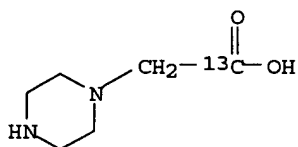


L20 ANSWER 7 OF 7 HCAPLUS COPYRIGHT 2006 ACS on STN  
AN 2004:681717 HCAPLUS  
DN 141:202794  
TI Methods, mixtures, kits and compositions pertaining to analyte determination  
IN Pappin, Darryl J. C.; Bartlet-Jones, Michael

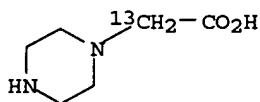


PA Applera Corporation, USA  
 SO PCT Int. Appl., 105 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

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PI	WO2004070352	A2	20040819	2004WO-US02077	20040127
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU2004209401	A1	20040819	2004AU-0209401	20040127
	CA---2488584	AA	20040819	2004CA-2488584	20040127
	US2004219685	A1	20041104	2004US-0765264	20040127
	US2004220412	A1	20041104	2004US-0765267	20040127
	US2004219686	A1	20041104	2004US-0765458	20040127
	EP---1588145	A2	20051026	2004EP-0705571	20040127
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	US2006105416	A1	20060518	2005US-0319685	20051228
PRAI	2003US-443612P	P	20030130		
	2004US-0765267	A1	20040127		
	2004WO-US02077	W	20040127		
AB	This invention pertains to methods, mixts., kits and/or compns. for the determination of analytes by mass anal. using unique labeling reagents or sets of unique labeling reagents. The labeling reagents can be isomeric or isobaric and can be used to produce mixts. suitable for multiplex anal. of the labeled analytes.				
IT	741683-84-1P, 1-Piperazineacetic-carboxy-13C acid 741683-85-2P, 1-Piperazineacetic- $\alpha$ -13C acid RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (methods, mixts., kits and compns. pertaining to analyte determination)				
RN	741683-84-1 HCAPLUS				
CN	1-Piperazineacetic-carboxy-13C acid (9CI) (CA INDEX NAME)				



RN 741683-85-2 HCAPLUS  
 CN 1-Piperazineacetic- $\alpha$ -13C acid (9CI) (CA INDEX NAME)



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(FILE 'HOME' ENTERED AT 09:55:12 ON 09 AUG 2006)

noble jarrell 09/08/2006

FILE 'HCAPLUS' ENTERED AT 09:55:31 ON 09 AUG 2006  
L1 6 US2005148773/PN OR (US2004-751388 OR WO2004-US223)/AP, PRN  
E PAPPIN D/AU  
L2 110 E3-10  
E PILLAI S/AU  
L3 278 E3-22  
E PILLAI SASI/AU  
L4 11 E3-4  
E COULL J/AU  
L5 150 E3-10  
L6 437 APPLERA/CS, PA

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FILE 'HCAPLUS' ENTERED AT 09:58:00 ON 09 AUG 2006  
L7 TRA L1 1- RN : 138 TERMS

FILE 'REGISTRY' ENTERED AT 09:58:01 ON 09 AUG 2006  
L8 138 SEA L7  
L9 73 L8 AND NC2NC2/ES  
L10 STR  
L11 50 L10  
L12 SCR 2039  
L13 1 L10 AND L12  
L14 70 L10 AND L12 FULL  
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L15 STR L10  
L16 1 L15 SAM SUB=L14  
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FILE 'HCAPLUS' ENTERED AT 10:07:20 ON 09 AUG 2006

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L18 18 L17 AND L8

FILE 'HCAPLUS' ENTERED AT 10:07:42 ON 09 AUG 2006  
L19 38 L17  
L20 7 L19 AND L1-6  
L21 31 L19 NOT L20

FILE 'HCAOLD' ENTERED AT 10:08:19 ON 09 AUG 2006  
L22 0 L17

FILE 'HCAPLUS' ENTERED AT 10:08:30 ON 09 AUG 2006  
L23 27 L21 AND (PY<=2004 OR AY<=2004 OR PRY<=2004)  
L24 31 L21, L23

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